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265

# GLOBAL STEWARDSHIP

**A Review of the Context and Challenges  
Facing Science and Economics Research  
Related To Global Change**

27

## THE PRESIDENT'S GLOBAL STEWARDSHIP CHALLENGE

Global stewardship is our shared responsibility and our shared opportunity. We must manage the Earth's natural resources in ways that assure the sustainability of humanity on this planet and in ways that maximize our potential for growth and opportunity for all. Global stewardship is a continuing process of political, economic, and social decision-making that meets the needs of the present generation while expanding the opportunities of future generations.

Global stewardship will become a dominant scientific, economic, and environmental issue of the 21<sup>st</sup> century. The experience of the past 45 years has shown that growth can be achieved only through the synergy of democratic political institutions and market economic systems. But just as democratic institutions are expanding, our ability to grow could be limited by changes in our already stressed environment. Solutions must be found which will protect the quality of our natural environment while allowing for the economic growth necessary to sustain and improve the living standards of a growing world population.

For perhaps the first time in human history, we now understand that our progress depends on accounting for our environmental resources and using them wisely. A new understanding of complex environmental systems is emerging. This understanding means that we are now called upon to create new directions for our creative energies and technologies. Global stewardship is the key.

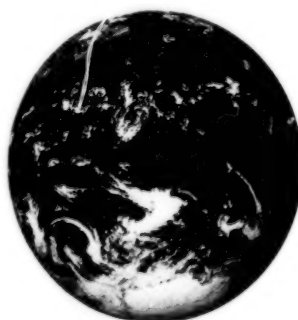
To exercise effective global stewardship, we must advance our knowledge of natural and human systems. We must create solutions that join economic growth with sound management of our environment. Meeting this challenge will require an integration of scientific, economic, and environmental concerns—an integration which moves global stewardship and human sustainability to center stage.

We need new tools to effectively evaluate how to respond to global environmental changes. Science and economics research can provide some of the tools needed to understand and properly manage our changing planet. Global change is concerned with such diverse but interrelated issues as ozone depletion, greenhouse gases, climate change, food security, water supply, sea level changes, wetlands, deforestation, biodiversity, population changes, and energy demands. A common ingredient in each of these issues is the level of uncertainty about the scale at which these changes are occurring and humanity's relative contribution to the change. There is also uncertainty regarding the social and economic consequences of change itself and of policy measures which might be taken to address it. As global stewards we must address these uncertainties by increasing our scientific and economic knowledge and take justifiable actions to manage global change—with due consideration given to the uncertainties which exist.

Therefore, the challenges of global stewardship require agreement in these three areas:

- Science and economics uncertainties—research challenges;
- Strategies for and challenges to integrating economics and science research; and
- Building better international partnerships for economics and science research.

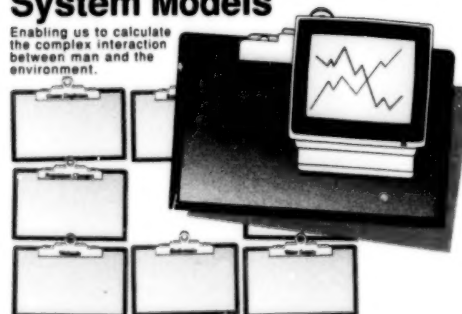
Our existence depends on our ability to draw sustenance from the natural world while supporting the systems that regenerate that world. Building an integrated program of economics and science research is the step we must take today. Global stewardship is not a fixed state, but a process of change in which environmental and economic values are brought into balance to meet human needs and to expand human prospects. Let us join together and accept the challenge of Global Stewardship.





## System Models

Enabling us to calculate the complex interaction between man and the environment.



## GOALS AND OBJECTIVES OF THE CONFERENCE

A White House Conference, initiated by President George Bush, on Science and Economics Research Related to Global Change was held in Washington, D.C., April 16-18, 1990. Conference Co-Chairmen were the Chairman of the President's Council of Economic Advisors, Dr. Michael J. Boskin, the Assistant to the President for Science and Technology, Dr. D. Allan Bromley, and the Chairman of the White House Council on Environmental Quality, Mr. Michael R. Deland. Seventeen nations and the leadership of the E.C. and the OECD sent ministerial level delegations to the conference.

The conference sought to add an integrating focus for international thought on Global Change, by introducing the concept of "Global Stewardship." It also emphasized a new dimension of the international dialogue on Global Change: that Economic analysis and research on broad global change policies must be integrated with the science of global change.

The conference conceived as an integral part of the on-going international process to understand the science of and policy options for diverse but related global environmental issues. It focuses on scientific and economic research issues as a complement to the ongoing Intergovernmental Panel on Climate Change (IPCC) and other international forums to address the research agenda for Global Change.

### Ministers and Senior Staff discussed areas such as:

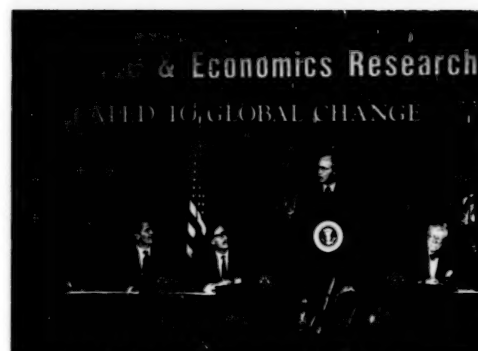
- Science and economics research issues relevant to policy on global change,
- Important next steps that substantially enhance and broaden international understanding of science and economic research issues,
- The special role that economics plays in integrating the science of Global Change with the policy process,
- Demonstrating linkages between science and economics research results and both domestic and international policy processes, and
- Framing the initial steps towards strategies for implementing joint international science and economics research efforts.

### Ministers and staff from the following countries participated:

- |                                |                        |
|--------------------------------|------------------------|
| 1. Australia                   | 10. Mexico             |
| 2. Brazil                      | 11. Netherlands        |
| 3. Canada                      | 12. Nigeria            |
| 4. Federal Republic of Germany | 13. Norway             |
| 5. France                      | 14. Poland             |
| 6. India                       | 15. Soviet Union       |
| 7. Indonesia                   | 16. United Kingdom     |
| 8. Italy                       | 17. Zaire              |
| 9. Japan                       | 18. European Community |
|                                | 19. OECD               |



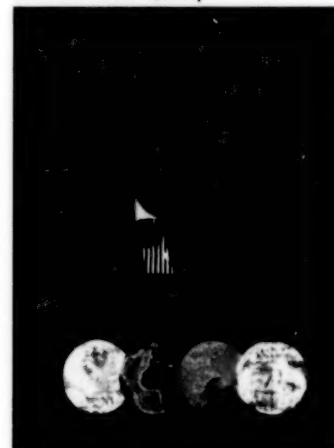
Plenary Session



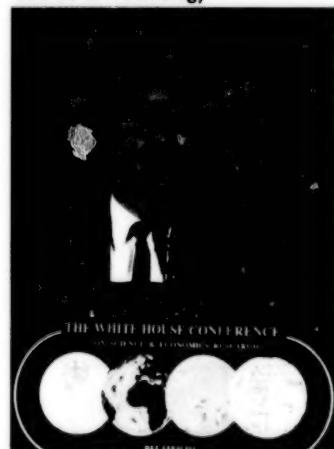
President Bush & Conference Co-Chairs



Michael R. Deland  
Chairman, President's Council on  
Environmental Quality



D. Allan Bromley  
Assistant to the President for  
Science & Technology



Michael J. Boskin  
Chairman, President's Council of  
Economic Advisors





## GLOBAL STEWARDSHIP

*President George Bush*

"What we need are facts, the stuff that science is made of. A better understanding of the basic processes at work in our whole world—better Earth system models that enable us to calculate the complex interaction between man and our environment." "...as we move forward, all of us must make certain we preserve our environmental well-being and our economic welfare. We know that these are not separate concerns. They are two sides of the same coin." "...no one nation acting alone can safeguard our Earth environment. Success requires a sense of global stewardship, an understanding that it is the Earth that endures, and that all of us are no more than tenants in temporary possession of a sacred trust."

## ENVIRONMENTAL QUALITY

"...We have disagreed on the question of global change, and we will disagree again. But on one point we do agree: the need to work together—openly, diligently, respectfully—in our common cause. We must increase our understanding—both of each other and of our shared problems. And we must act. ...Just as we are breaking down the physical, economic, and political barriers between our nations, meeting the challenge of global change will require breaking down barriers between energy, economics and environmental perspectives. As the President has stated, 'Global Stewardship is not a fixed state but a process of change.' Accelerating that process of change is the purpose of this conference. In the long run, all of us must understand the environmental and economic implications of a changing world... we can forge partnerships that will enhance that understanding. We need to look beyond the borders of our disciplines, for if economists do not understand the needs of scientists, and scientists do not understand the perspectives of economists, and if policy makers do not listen carefully to both, our solutions cannot be complete."

## SCIENCE RESEARCH

"...the social sciences—economics, psychology, sociology—must be an integral part of any approach to the understanding of global change. ...the foundation of this conference is what we do know and what we do not know about the science and economics of global change. At a more detailed level, we seek to determine which uncertainties might be reducible in the foreseeable future and which are not, and to understand how scientific uncertainties affect our economic modeling and vice versa. ...the President has instructed us from the outset of our planning to design a conference with a primary goal of complementing, strengthening, and supporting the entire IPCC process, which he considers to be the central and appropriate forum for our joint efforts toward understanding of, and responding to, the questions of Global Stewardship. ...We must merge science and economics with policy to a degree that has not been done before. The uncertainties that surround us are daunting. But humans have never been hindered—at least not for long—by uncertainties. The explorers who we know from history did not let uncertainties stand in their way. Rather, they saw uncertainties as opportunities, and in following those opportunities they opened new worlds."

## ECONOMICS RESEARCH

"In my role as Chairman of the President's Council of Economic Advisors, I regularly confront a diverse set of economic issues involving monetary, budget, regulatory, and trade policies. While all of these are important, global change and our response to it may be just as economically significant in the long run. ...This conference reflects our interest in resolving the major scientific and economic uncertainties that surround debates about global change policy and our concern with the economic and human consequences of proposed mitigation measures. The extensive U.S. experience with environmental regulation has shown clearly—and sometimes painfully—that one cannot design policies that will produce both a healthy environment and a sound economy without careful, integrated use of science and economics research. Careful use of all available information is nowhere more important than in the context of possible global warming induced by human activities."



Working Session





**James D. Watkins,**  
Secretary, Department of Energy

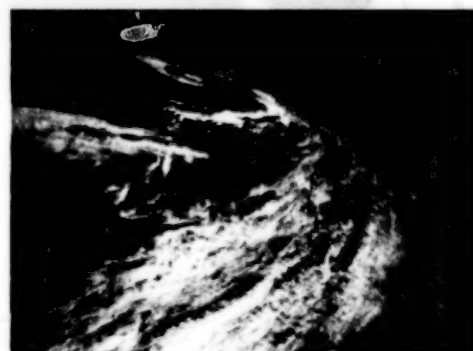
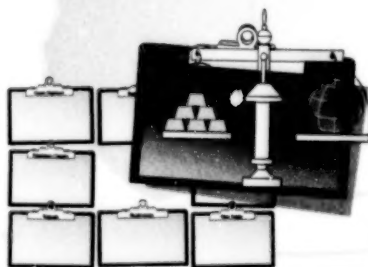


**William K. Reilly,**  
Administrator, EPA



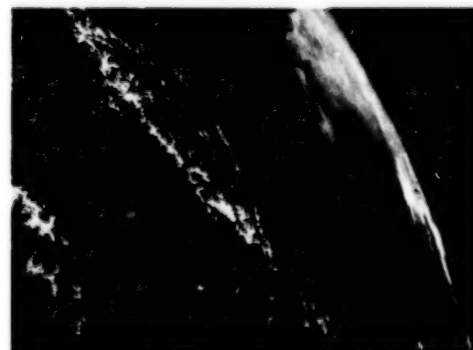
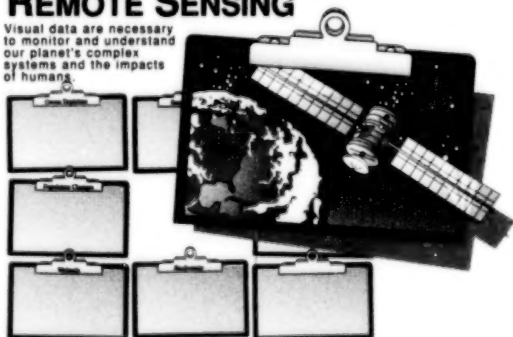
**Jan Janowski,**  
Deputy Prime Minister of Poland

*"In our opinion, the fact that this conference has been convened demonstrates that America feels particularly responsible for the future of the world. This future clearly has to be our common concern and responsibility ... International cooperation is of fundamental importance for an effective response to global change. ... Our country, despite great economic difficulties, sees the necessity of sustainable development as a basic aim of our economy. Leaders of developing countries should promote economic growth through the most effective means, and should include ecological considerations in their economic policy decisions."*



## REMOTE SENSING

Visual data are necessary to monitor and understand our planet's complex systems and the impacts of humans.

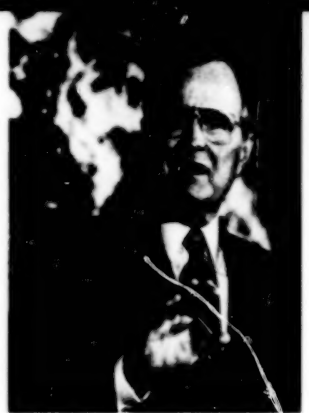


## SELECTIONS FROM THE PRESIDENT'S CONFERENCE REMARKS

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A moment of perspective: For your purpose here is profoundly important to the state of nature, and the fate of mankind. Your presence has offered hope for a new era of environmental cooperation around the world and the promise of a quieter, more thoughtful, more careful tenancy of nature's legacy to humanity. Stewardship finds expression in many ways—from public demonstration to landmark legislation. But it is also rewarded in many ways, in moments unexpected and unforgettable. Nature's beauty has a special power—a resonance that at once elevates the mind's eye, and yet humbles us as well. Before nature, the works of humanity seem somehow small. We may build cathedrals, temples, mosques, monuments and mausoleums to great men and women and high ideals. And still we know we can build no monuments to compare with nature. Our greatest creations really can't equal God's smallest. So we're called upon to ensure that the Earth's integrity is preserved and that mankind's prospects for prosperity, peace, and in some regions, even survival, are not put at risk by the unintended consequences of noble intentions. The minds at work here are among the very best we have and they are the best insurance that our actions are sound. We've gathered talent from around the world—scientists, economists, environmentalists, energy ministers, policy makers—to address the environmental and developmental future of the planet. An unprecedented cross-fertilization of disciplines and of nations. That alone, I think, is reason for hope.

But if a diversity of perspective is expected, unity of purpose is crucial. In an atmosphere of uncertainty, we must foster a climate of good will—and stubborn hope—that we might forge solutions without the excessive heat of politics. Among all the challenges in our tenancy of this planet, climate change is, of course, foremost in your minds. We are leading the search for response strategies, and working through the uncertainty of both the science and the economics of climate change. But there is one area where we will allow for no uncertainty—and that is our commitment to action—to sound analyses and sound policies. To those who suggest we're only trying to balance economic growth and environmental protection, I say they miss the point. We are calling for an early new way of thinking, to achieve both while compromising neither. By applying the power of the marketplace in the service of the environment.

But above all, the climate change debate is not about research versus action, for we have never considered research a substitute for action. Over the last two days, you've heard, formally and informally, that the United States is already taking action to stabilize and reduce emissions through our clean air legislation, our use of market-based incentives to control pollution, our search for alternative energy sources, our emphasis on energy efficiency, our reforestation initiatives, and our technical assistance programs to developing nations.

These policies were developed to address a broad range of environmental concerns, in particular our phaseout of CFCs, the impact of our Clean Air Act on emissions, our tree-planting initiative, and other strategies will produce reductions in greenhouse gas emissions that will reach 15 percent in ten years—and considerably more later on. We are also making a leading investment in climate change research—absolutely essential because it will tell us what to do next. But what bears emphasis is that we are committed to domestic and international policies that are environmentally aggressive, effective, and efficient. And we are deeply committed to an international partnership, through the IPCC process. In conference working groups, we've offered four new ideas—a charter for cooperation in science and economics research related to global change; possible creation of international institutes for research on the science and economics of global change; data and information transfers through a global change communications network; and a statement of principles for implementing international cooperation in scientific and economic research related to global change. I call on you to support these suggestions. If developed nations ignore the growth needs of developing nations, it will imperil us all. We know that even small changes in GNP growth rate often threaten adequate shelter, food, and health care for millions and millions of people. And to bear this in mind is no barrier to action. Those who have ascended the economic hill must break down the barriers to progress and assist others now making the climb. But this will only be possible if the nations of the world are linked in partnerships of every kind: scientific, economic, technical, agricultural, environmental.

America and other nations must now extend an offered hand to emerging democracies in Eastern Europe and to developing societies around the world. Let us neither grieve nor quarrel, but act on what we know can help, and act in good faith. Our challenge is global stewardship. To work together to find long-term strategies that will meet the needs of the entire world, and all therein.

Our conviction, and my sincere belief, is that environmental protection and economic growth, well-managed, complement one another. And that we can serve this generation while preserving the Earth for the next and all that follow. It is an uncommon opportunity we share. And so let us seize the moment. And together, we will succeed.

THE WHITE HOUSE CONFERENCE  
ON SCIENCE & ECONOMICS RESEARCH





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